AMENDMENTS TO THE CLAIMS

1 (Currently Amended): A method for providing a variable beam hop cycle beam laydown, the method comprising:

transmitting first downlink beam energy for first cells according to a first beam hop cycle;

transmitting second downlink beam energy for second cells according to a second beam hop cycle different from the first beam hop cycle; and

transmitting transition downlink beam energy for transition cells according to a transition beam hop cycle for transitioning between the first beam hop cycle and the second beam hop cycle;

wherein each beam hop cycle defines how the downlink energy of one beam is time-shared between at least two cells and wherein each of the transmitting steps comprises transmitting beam energy to at least two cells in a time-division-multiplexed ~~sequential~~ manner defined by a hop cycle.

2 (Previously Presented): The method of claim 1, wherein transmitting first downlink beam energy comprises transmitting downlink beam energy for a first beam-hopped pair of cells, wherein transmitting second downlink beam energy comprises transmitting downlink beam energy for a second beam-hopped pair of cells, and wherein transmitting transition downlink beam energy comprises transmitting downlink beam energy for a transition beam-hopped pair of cells.

3 (Original): The method of claim 1, wherein transmitting transition downlink beam energy comprises transmitting power gated downlink frames.

4 (Original): The method of claim 1, wherein each transmitting step comprises transmitting at at least a first frequency and first polarization.

5 (Previously Presented): The method of claim 1, wherein transmitting second downlink energy comprises transmitting second downlink beam energy according to a second beam hop cycle that provides additional bandwidth to meet bandwidth needed for one of the second cells.

6 (Previously Presented): The method of claim 1, further comprising the step of reading frame headers that define the first beam hop cycle, second beam hop cycle, and transition beam hop cycle.

7 (Currently Amended): A variable beam hop cycle beam laydown comprising:

first cells supported by a first beam hop cycle;

second cells supported by a second beam hop cycle different from the first beam hop cycle; and

transition cells supported by a transition beam hop cycle for transitioning between the first beam hop cycle and the second beam hop cycle;

wherein each beam hop cycle defines how the downlink energy of one beam is time-shared between at least two cells and wherein each of the hop cycles defines a duty cycle ~~schedule~~ for transmitting beam energy to at least two cells in a time-division-multiplexed ~~sequential and non-simultaneous~~ manner.

8 (Previously Presented): The laydown of claim 7, wherein the first cells comprise a first beam-hopped pair of cells, the second cells comprise a second beam-hopped pair of cells, and the transition cells comprise a third beam-hopped pair of cells.

9 (Previously Presented): The laydown of claim 8, wherein the first beam hop cycle is a 50-50 beam hop cycle wherein beam energy is directed to two cells sequentially on a 50-50 duty cycle basis.

10 (Currently Amended): A variable beam hop cycle beam laydown comprising:

first cells supported by a first beam hop cycle;

second cells supported by a second beam hop cycle different from the first beam hop cycle; and

transition cells supported by a transition beam hop cycle for transitioning between the first beam hop cycle and the second beam hop cycle;

wherein each beam hop cycle defines how the downlink energy of one beam is time-shared between at least two cells and wherein each of the hop cycles defines a schedule for transmitting beam energy to at least two cells in a sequential and non-simultaneous manner;

wherein the first cells comprise a first beam-hopped pair of cells, the second cells comprise a second beam-hopped pair of cells, and the transition cells comprise a third beam-hopped pair of cells;

wherein the first beam hop cycle is a 50-50 beam hop cycle wherein beam energy is directed to two cells sequentially on a 50-50 duty cycle basis; and

~~The laydown of claim 9,~~ wherein the second beam hop cycle is a 75-25 beam hop cycle in which beam energy is directed to two cells sequentially on a 75-25 duty cycle basis, and wherein the transition beam hop cycle is a 50-25 beam hop cycle in which beam energy is directed to two cells sequentially on a 50-25 duty cycle basis and is powered off for a remaining 25% of the duty cycle.

11 (Previously Presented): The laydown of claim 10, wherein the 50-25 beam hop cycle directs downlink beam energy to a first transition cell 50 percent of a time period, downlink beam energy to a second transition cell 25 percent of the time period, and a power gated downlink beam 25 percent of the time period.

12 (Cancelled)

13 (Previously Presented): The laydown of claim 7, wherein the first, second, and transition beam hop cycles control downlink beam energy of at least a first frequency and polarization.

14 (Previously Presented): The laydown of claim 7, wherein the first cells are adjacent cells, the second cells are adjacent cells, and the transition cells are adjacent cells.

15 (Previously Presented): The laydown of claim 7, wherein the first cells are non-adjacent cells, the second cells are non-adjacent cells, and the transition cells are non-adjacent cells.

16 (Original): The laydown of claim 7, wherein at least one of the first, second, and transition cells are adjacent cells.

17 (Currently Amended): Apparatus for generating a variable hop cycle beam laydown, the apparatus comprising:

a waveform generator producing a first downlink beam, second downlink beam, and a transition downlink beam;

at least one switch directing the first downlink beam between first feed paths to first cells, directing the second downlink beam between second feed paths to second

cells, and directing the transition downlink beam between third feed paths to transition cells;

at least one feed path selection input coupled to the at least one switch; and

a memory for storing downlink beam type definitions that direct the feed path selection input to control the switch according to a first beam hop cycle, a second beam hop cycle different from the first beam hop cycle, and a transition beam hop cycle;

wherein each beam hop cycle defines how one downlink beam is time-shared between at least two cells and wherein operation of the at least one switch ensures that each downlink beam is directed to at least two cells in a time-division-multiplexed ~~sequential and non-simultaneous~~ manner.

18 (Original): The apparatus of claim 17, further comprising a power gating circuit coupled to the waveform generator for gating power in the transition downlink beam.

19 (Original): The apparatus of claim 18, wherein the first, second, and transition downlink beams comprise frames with a header field and a payload field.

20 (Previously Presented): The apparatus of claim 17, wherein the first beam hop cycle directs additional bandwidth to one of the first cells to meet bandwidth need.

21 (Previously Presented): The apparatus of claim 20, wherein the first beam hop cycle is a 75-25 beam hop cycle in which beam energy is divided temporally between two cells on a 75-25 duty cycle basis.

22 (Currently Amended): Apparatus for generating a variable hop cycle beam laydown, the apparatus comprising:

a waveform generator producing a first downlink beam, second downlink beam, and a transition downlink beam;

at least one switch directing the first downlink beam between first feed paths to first cells, directing the second downlink beam between second feed paths to second cells, and directing the transition downlink beam between third feed paths to transition cells;

at least one feed path selection input coupled to the at least one switch; and

a memory for storing downlink beam type definitions that direct the feed path selection input to control the switch according to a first beam hop cycle, a second beam hop cycle different from the first beam hop cycle, and a transition beam hop cycle;

wherein each beam hop cycle defines how one downlink beam is time-shared between at least two cells and wherein operation of the at least one switch ensures that each downlink beam is directed to at least two cells in a sequential and non-simultaneous manner;

wherein the first beam hop cycle directs additional bandwidth to one of the first cells to meet bandwidth need;

wherein the first beam hop cycle is a 75-25 beam hop cycle in which beam energy is divided temporally between two cells on a 75-25 duty cycle basis; and

wherein the second beam hop cycle is a 50-50 beam hop cycle in which beam energy is divided temporally between two cells on a 50-50 duty cycle basis, and wherein the transition beam hop cycle is a 50-25 beam hop cycle in which beam energy is directed to two cells sequentially on a 50-25 duty cycle basis and is powered off for a remaining 25% of the duty cycle.

23 (Cancelled)

24 (Original): The apparatus of claim 17, wherein at least one of the first cells, second cells, and transition cells are adjacent.

25 (Original): The apparatus of claim 17, wherein at least one of the first cells, second cells, and transition cells are non-adjacent.

26 (Previously Presented): A variable hop cycle beam laydown comprising:

first cells supported by a first hop cycle;

second cells supported by a second hop cycle different than the first hop cycle; and

transition cells supported by a transition hop cycle for transitioning between the first hop cycle and the second hop cycle;

wherein said transition hop cycle comprises downlink beam energy in a first transition cell a first percent of a time period, downlink beam energy in a second transition cell a second percent of the time period, and a power gated downlink beam for a remaining percent of the time period.

27 (Previously Presented): Apparatus for generating a variable hop cycle beam laydown, the apparatus comprising:

a waveform generator producing a first downlink beam, second downlink beam, and a transition downlink beam;

at least one switch directing the first downlink beam between first feed paths to first cells, directing the second downlink beam between second feed paths to second cells, and directing the transition downlink beam between third feed paths to transition cells;

at least one feed path selection input coupled to the at least one switch;

a memory for storing downlink beam type definitions that direct the feed path selection input to control the switch according to a first hop cycle, a second hop cycle different than the first hop cycle, and a transition hop cycle,

wherein the transition hop cycle specifies transmission of downlink beam energy in a first transition cell a first percent of a time period, specifies downlink beam energy in a second transition cell a second percent of the time period, and specifies a power gated downlink transition beam a remaining percent of the time period; and

a power gating circuit coupled to the waveform generator for gating power in the transition downlink beam.